## CLAIMS

1. An apparatus for dissipating heat and shielding electromagnetic radiation from at least one integrated circuit on a printed circuit board, the system comprising:

a printed circuit board having a surface and at least one integrated circuit on the surface, the printed circuit board surface having an electrically conductive region surrounding the at least one integrated circuit; and

an electrically conductive cover portion having a top surface and a bottom edge, the top surface having at least one heat-dissipating structure extending therefrom and the bottom edge being in electrically conductive contact with the electrically conductive region of the printed circuit board, the electrically conductive cover portion defining a cavity that encloses the at least one integrated circuit on the surface of the printed circuit board to shield electromagnetic radiation, the at least one integrated circuit being in thermally conductive communication with the electrically conductive cover portion for transferring heat thereto to be dissipated by the at least one heat-dissipating structure.

2. The apparatus of claim 1, wherein the printed circuit board includes at least one conducting plane beneath the at least one integrated circuit and at least one electrically conductive through-hole, the at least one electrically conductive through-hole being in electrical communication with the electrically conductive region and with the at least one conducting plane to provide a grounded electromagnetic shield on all sides of the at least one integrated circuit.

3. The apparatus of claim 1 wherein the electrically conductive cover portion is rectangular in shape.

4. The apparatus of claim 1 wherein the electrically conductive cover portion is circular in shape.

5. The apparatus of claim 1 wherein the top of the at least one heat-dissipating structure is flat.

6. The apparatus of claim 1 wherein the top of the at least one heat-dissipating is curved.

7. The apparatus of claim 1 wherein the cavity of the electrically conductive cover portion is sized to cover the at least one integrated circuit to within a specified separation distance between a top surface of the at least one integrated circuit and a lower surface of the electrically conductive cover portion.

8. The apparatus of claim 1, further comprising a thermally conductive compound disposed in the cavity of the electrically conductive cover portion to produce thermally conductive communication between the at least one integrated circuit and the electrically conductive cover portion.

9. The apparatus of claim 1, wherein the electrically conductive cover portion includes a hole to insert a malleable thermally conductive compound into the cavity of the electrically conductive cover portion.

10. The apparatus of claim 1, wherein the at least one heat-dissipating structure is an integral part of the electrically conductive cover portion.

11. The apparatus of claim 1, wherein the cavity of the electrically conductive cover portion encloses two or more integrated circuits.

12. A printed circuit board, comprising:

a board surface having an electrically conductive region that surrounds the at least one integrated circuit;

an integrated circuit on the board surface; and

an electrically conductive cover portion having a top surface and a bottom edge, the top surface having at least one heat-dissipating structure extending therefrom, the bottom edge being in electrically conductive contact with the electrically conductive region that surrounds the at least one integrated circuit, the electrically conductive cover portion defining a cavity that encloses the at least one integrated circuit on the board surface to shield electromagnetic radiation, the at least one integrated circuit being in thermally conductive communication with the electrically conductive cover portion for transferring heat thereto to be dissipated by the at least one heat-dissipating structure.

13. The printed circuit board of claim 12, further comprising at least one conducting plane beneath the at least one integrated circuit and at least one electrically conductive through-hole, the at least one electrically conductive through-hole being in electrical communication with the electrically conductive region and with the at least one

conducting plane to provide a grounded electromagnetic shield on all sides of the at least one integrated circuit.

14. The printed circuit board of claim 12, wherein the electrically conductive cover portion is rectangular in shape.

15. The printed circuit board of claim 12, wherein the cavity of the electrically conductive cover portion is sized to cover the at least one integrated circuit to within a specified separation distance between a top surface of the at least one integrated circuit and a lower surface of the electrically conductive cover portion.

16. The printed circuit board of claim 12, further comprising a thermally conductive compound disposed in the cavity of the electrically conductive cover portion to produce thermally conductive communication between the at least one integrated circuit and the electrically conductive cover portion.

17. The printed circuit board of claim 12, wherein the electrically conductive cover portion includes a hole to insert a malleable thermally conductive compound into the cavity of the electrically conductive cover portion.

18. The printed circuit board of claim 12, wherein the at least one heat-dissipating structure is an integral part of the electrically conductive cover portion.

19. The printed circuit board of claim 12, wherein the cavity of the electrically conductive cover portion encloses two or more integrated circuits.